# EXECUTIVE SUMMARY

**FOR**

**PROPOSED EXPANSION OF STEEL MANUFACTURING UNIT BY UPGRADATION OF INDUCTION FURNACE**

**IN THE EXISTING STEEL MANUFACTURING UNIT OF**

## M/S AKSHAT ALLOYS

**Village- Ambey Majra, Mullanpur Road, Mandigobindgarh, District- Fatehgarh Sahib, Punjab.**


**Prepared by**

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# EXECUTIVE SUMMARY

## 1.0 Project Name and location

The proposed project i.e., **M/s Akshat Alloys** is a non-toxic, secondary metallurgical process-based industry. The plant is located at Village-Ambey Majra, Mandigobindgarh, District- Fatehgarh Sahib, Punjab.

## 2.0 Products and capacities

The industry has already granted Consent to Operate for manufacturing of Steel Ingots @84TPD/29,400TPA with 01 no. of Induction Furnace. Now, the unit proposes, the expansion of existing steel manufacturing unit by upgradation of existing Induction Furnaces of capacity 7 TPH with Induction furnace having capacity 20 TPH and 01 no. of concast machine. The project will have 2.11 Acres of land. Total capacity of the project after expansion will be 240 TPD/84,000 TPA of Steel Ingots

**After expansion the production details will be as under**

| Product Name | Existing (TPA) | Proposed (TPA) | Total (TPA) |
|---|---|---|---|
| Steel Ingots | 29,400 | 54,600 | 84,000 |

## 3.1 Land Area

The existing plot area is 2.11 acres there is no expansion in the land area. Thus total land area will be 2824.22 The green belt requirement is 2824.22 sqm i.e. 33% of total area.

## 3.2 Raw Material Requirement

The raw materials and finished goods will be transported through trucks. There is well developed road structure on Mullanpur Road, Mandi Gobindgarh as well as within premises also. No additional road infrastructure will be required for transportation. The number of trucks per day for raw material and finished product transportation will be approx. 7 trucks. The raw material source will be standard manufacturer or supplier. The raw material details are given as under:

| Raw materials | Existing (TPA) | Proposed (TPA) | Total (TPA) |
|---|---|---|---|
| MS Scrap, CI, Sponge Iron, Ferro Alloys | 32,200 | 59,800 | 92,000 |

### 3.3 Water Requirement

Water consumption in the unit shall be for twin purpose namely domestic and make up water for cooling tower (CT). Water requirement will be met through existing tube well. The detail of water requirement and water balance is given below: -

**For Summer Season**

| Description (KLD) | Existing (KLD) | Additional (KLD) | Total (KLD) |
|---|---|---|---|
| **Domestic** | 4.5 | 1.5 | 6.0 |
| **Cooling (makeup water)** | 23.0 | 37.0 | 60.0 |
| **Total** | 27.5 | 38.5 | 66 |

**For winter Season**

| Description (KLD) | Existing (KLD) | Additional (KLD) | Total (KLD) |
|---|---|---|---|
| **Domestic** | 4.5 | 1.5 | 6.0 |
| **Cooling** | 14.0 | 22.0 | 36.0 |
| **Total** | 18.5 | 23.5 | 42 |

**For Rainy Season**

| Description (KLD) | Existing (KLD) | Additional (KLD) | Total (KLD) |
|---|---|---|---|
| **Domestic** | 4.5 | 1.5 | 6.0 |
| **Cooling** | 8.0 | 21.0 | 29.0 |
| **Total** | 12.5 | 22.5 | 35 |

### 3.4 Power Requirement

The Power Requirement will be met by sourcing the power from Punjab State Power Corporation limited from nearby Sub-station. The detail of power requirement existing & after expansion is given below:-

**Power Requirement**

| DESCRIPTION | EXISTING | PROPOSED | TOTAL |
|---|---|---|---|
| Power (KW) | 3000 | 1000 | 4000 |
| Source | Punjab State Power Corporation Limited, Punjab | | |

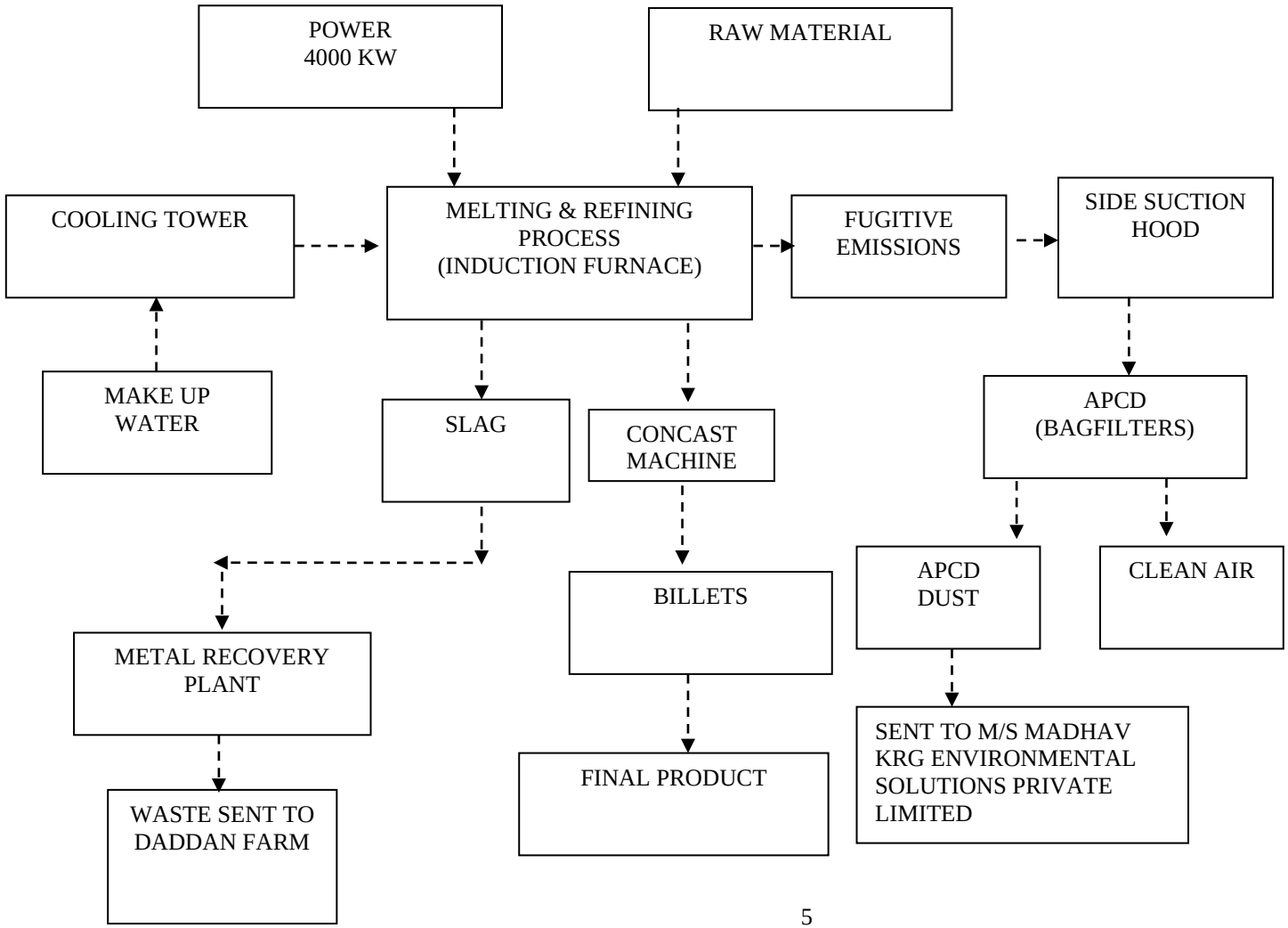
### 3.5 Manpower Requirement

There are about 100 persons working in the unit. The proposed expansion will generate employment for 30 people more. Thus, after expansion about 130 persons will be working in the unit.

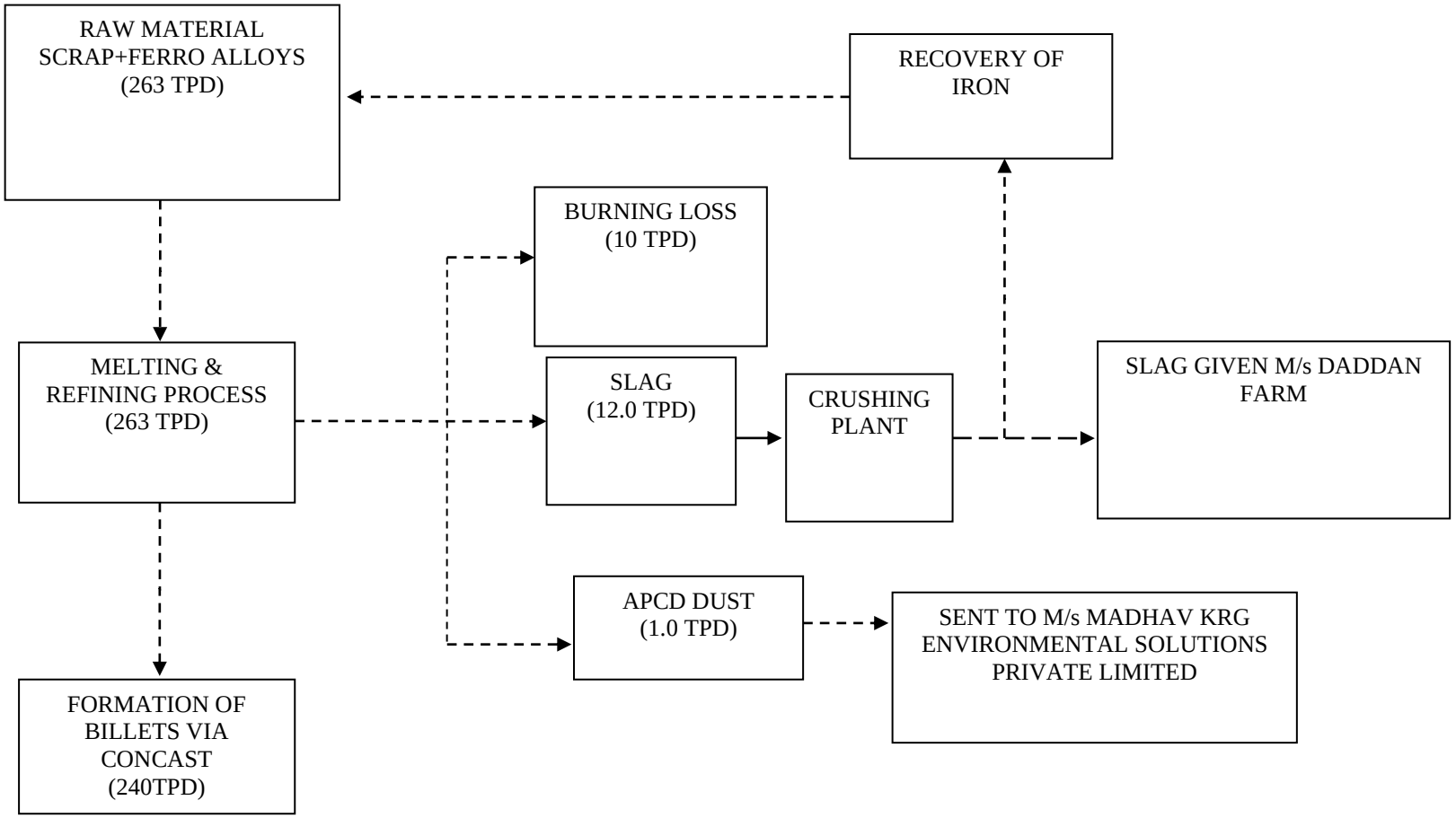
| S.No. | PARTICULARS | EXISTING | PROPOSED | TOTAL |
|---|---|---|---|---|
| 1. | Manpower (Nos.) | 100 | 30 | 130 |

## 4.0 Process Description

### PROCESS FLOW CHART



# Material Balance



## 5.0 Description of Mitigation Measures

The purpose of mitigation measures is to avoid, reduce or minimize unwanted impacts on the environment and to maximize beneficial impacts. To minimize & control the emission from I.F, the exhaust after suction through side suction hood is passed through spark arrestor, air cooling and finally bag filters before its discharge to atmosphere. DG set is fitted with a canopy and adequate stack to take care of noise and particulate & gaseous emission. About 12.0 TPD of slag which will not a H.W will be generated and the same after recovering of iron will be supplied to M/s Daddan Farm under proper agreement. Treated waste water from septic tanks will be used for plantation within the industrial premises. The industry is regularly operating and maintaining its APCD and ensuring that the emissions are adequately collected and concentration of air pollutants in its emissions conforms to the emission standards laid down by the board.

## 6.0 Cost Details

The total cost of the project after expansion will be Rs 4.49 Crores including Rs 0.8 Crores as cost of expansion.

| Particulars | Existing | Proposed | Total |
|---|---|---|---|
| Project Cost (Cr) | Rs 3.69 | Rs 0.8 | Rs 4.49 |

## 7.0 Site Details

**M/S Akshat Alloys** is located at Village- Ambey Majra, Mandigobindgarh, District Fatehgarh Sahib, Punjab. Its global coordinates are Latitude 30°37'56.98"N, 30°37'56.87"N, 30°38'00.75"N, 30°38'00.72"N, & Longitude 76°19'01.20"E, 76°19'03.59"E, 76°19'03.77"E, 76°19'01.18"E. Mandigobindgarh is the nearest city (about 3.2 Km, NW) and also the nearest railway station (about 3.4 km, NE). Nearest Airport is Chandigarh which is at 46 km from site. No National Parks/ Wildlife Sanctuaries/ Biosphere Reserves/ Reserved Forests exist within 10 km radius of project site.

## 8.0 Baseline Environmental Data and their impacts

Various Environmental factors as existing in the study area which are liable to be affected by the activities have been assessed both quantitatively and qualitatively. Baseline environmental data generation of study area was carried out during the period 15 May-15 June 2021 & 15 September-15 November,2021.

### 8.1 Ambient Air Quality

**For 15 May-15 June,2021)**

The $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_2$, CO levels were monitored at eight locations in the study area for **(15 May-15 June, 2021)**. The P98 levels of criteria pollutants are as follows: $PM_{2.5}$ is 44.6 μg/$m^3$, $PM_{10}$ is 56.54 μg /$m^3$, $SO_2$ is 14.54 μg/$m^3$, $NO_2$ is 8.45 μg/$m^3$ and CO is 0.52 mg/ $m^3$. The baseline air quality level is within the National Ambient Air Quality Standards prescribed for industrial, residential, rural & other area and also satisfies the air quality index (AQI) w.r.t health bracket for all the monitoring. **(Standards are 60, 100, 80, 80μg/$m^3$ and 4.0mg/$m^3$ for $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_x$ and CO respectively).** Due to better pollution abatement facilities, proposed project will have insignificant impact on existing air quality.

**(For 15 September-15 November, 2021)**

The $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_2$, CO levels were monitored at eight locations in the study area for **(15 September-15 November, 2021).** The P98 levels of criteria pollutants are as follows: $PM_{2.5}$ is 47.9 μg/$m^3$, $PM_{10}$ is 90.71 μg /$m^3$, $SO_2$ is 8.65 μg/$m^3$, $NO_2$ is 15.3 μg/$m^3$ and CO is 0.579 mg/ $m^3$. The baseline air quality level is within the National Ambient Air Quality Standards prescribed for industrial, residential, rural & other area and also satisfies the air quality index (AQI) w.r.t health bracket for all the monitoring. **(Standards are 60, 100, 80, 80μg/$m^3$ and 4.0mg/$m^3$ for $PM_{2.5}$, $PM_{10}$, $SO_2$, $NO_x$ and CO respectively).** Due to better pollution abatement facilities, proposed project will have insignificant impact on existing air quality.

### 8.2 Water Quality:

Eight groundwater samples and one surface water sample were collected from the study area

for chemical and biological analysis. The groundwater quality of the study is satisfactory. No metallic or bacterial contamination was found in the water quality. But bacterial contamination is found in surface water. Since, no waste water will be discharged on land; water quality is not likely to be impacted.

### 8.3 Noise Environment

**(For 15 May-15 June 2021)**

**Ambient Noise quality:**

Ambient noise levels were monitored at 8 locations in the study area. Noise levels at the Project site was found to be 61.4 dB (A) in day time and 51.6 dB (A) at night. The highest levels were observed at Project Site. The baseline noise levels are well within the National Standards.

**(For15 September-15 November, 2021)**

**Ambient Noise quality:**

Ambient noise levels were monitored at 8 locations in the study area. Noise levels at the Project site was found to be 64.4 dB (A) in day time and 52.2 dB (A) at night. The highest levels were observed at Project Site. The baseline noise levels are well within the National Standards.

### 8.4 Soil Quality

Eight soil samples were collected from the study area and analyzed. The texture of soil is sandy loam. The organic matter, nitrogen, potassium and phosphorus content of the soil are moderate. The pH of all the soil samples is within the acceptable range.

### 8.5 Ecological environment

Ecological data has been collected through secondary sources and by site visits. The tree species kikar, Jamun, Peepal and Mango etc are the dominant plant species of the study area, jungle cat, cobra, krait, snakes, hare, pigeon and variety of birds are the common animals of the study area. No endangered species of plants and animals as listed in the respective schedule-I of Wild Life Act 1972.

### 8.6 Sensitive Ecosystem

Within the study area, no plant or animal species were found to be on the endangered list. No ecologically sensitive area like biosphere reserve, tiger reserve, and migratory corridors of wild elephant, wetland, national park and wildlife sanctuary are present in the study area. Agriculture and industrial workers dominate the occupational structure of the study area.

### 8.7 Socioeconomic Condition

Socioeconomic status has been studied through secondary sources and by site visits. The social requirements identified such as Drinking water requirement, Promotion of Educational institutions and medical facilities to the villagers (especially Senior Citizens and infants or pregnant ladies). Community centers, recreation facilities etc will also be developed as part of social responsibility.

## 9.0 Possible Hazards & Risks from Secondary Metallurgical Industries

The various process operations, which are having potentially high risk to human exposure and which have high levels of attention area identified in **Table.**

**Table: Possible Risk**

| S.No. | Plant Area | Possible Deviation from normal operation | Likely Causes | Consequences |
|---|---|---|---|---|
| 1 | Furnace | Re-circulating and cooling water coming in contact with the molten iron or slag. | Leakage of water from the walls Spurting of metal/ slag. | Explosion under extreme cases. |
| | | Presence of Oil & Grease and other Impurities in raw materials. | Fire | Sudden catches fire & flames |
| 2 | High Power Transformer | Oil temperature being very high. | Varying room Temperatures. | Sudden flashing of fire or bursting. |

| | | | | |
|---|---|---|---|---|
| 3 | High Tension Electrical Installation | Heavy sparking at the pot heads and the joints. | Loose joints, cable cut, burning of fuses, short circuits etc. | Sparks in the beginning, devastating fire if neglected. |

**Specific Hazard & their Control**

| S.No. | Hazard | Reason | Control Measures |
|---|---|---|---|
| 1 | Molten Metal Explosion<br>- Steam Explosion<br><br><br>- Chemical Explosion | - Use of oxidized or rusted iron.<br>-Damp refractories or tools.<br>-Containers of aerosols mobile & phone batteries.<br>- Accidentally mixing of oxidizing substance e.g., $KNO_3$ $(NH_4)_2NO_3$ in furnace.<br>-Incorrect combination/ ratio of metals being processed. | - Checking the refractories moisture & strategies for pre-heating the furnace & the refractories.<br>- Proper storage system to ensure against accidental use and outside the excessive heat area. Storage paints, solvents and other combustible material specially. |
| 2 | Heat Stress | - Working in extreme hot condition. | - Shielding heat radiations from hot surface.<br>- Supply of clean drinking water<br>- Educating workers about the symptoms of excessive heat exposure.<br>- Short breaks & rotation of workers. |

| | | | |
|---|---|---|---|
| 3 | Burns | - Splashing of molten material<br>- Touching of hot surface<br>- radiation | - Providing specific PPE's<br>- Providing protective barriers to minimum exposure.<br>- Proper design & Process Control.<br>- Automation to minimize risk associated with material handling or casting. |
| 3 | Light Radiation | - UV & IR radiations of high intensity from molten metal especially the pouring areas. | - Educating the workers regarding risks and safety measures.<br>- Proper labeling of risky areas w.r.t radiation.<br>- Shielding of workers and providing proper PPE's. |

**First Aid Measures**

Following first aid measures will be taken:

a. **Eye Contact**: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.

b. **Skin Contact**: Wash with cool water and a pH neutral soap or a milk skin detergent. Seek medical attention for rash, burns, irritation and dermatitis.

c. **Inhalation**: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms.

d. **Ingestion**: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention.

**Exposure Controls & Personal Protection**

**Exposure Controls**

- Control of dust through implementation of good housekeeping and maintenance.
- Proper fume and dust extraction system to control fume/dust emission in work zone.
- Use of PPE, as appropriate (e.g. masks and respirators).

➢ Use of mobile vacuum cleaning systems to prevent dust buildup on paved areas.

**Personal Protective Equipment (PPE)**

➢ Respiratory Protection: When the dust level is beyond exposure limits or when dust causes irritation or discomfort use respirator.

➢ Eye Protection: Wear Safety goggles to avoid dust contact with the eyes. Contact lenses should not be worn when handling the materials.

➢ Skin Protection: Wear impervious abrasion and alkali resistant gloves, boots, long sleeved shirt, long pants or other protective clothing to prevent skin contact.

**Fire Fighting Facilities**

➢ Keeping in view the nature of fire and vulnerability of the equipment and the premises, following fire protection facilities have been envisaged for the plant.

**Hydrant System**

➢ Internal hydrants will be provided in all major plant units at suitable locations and in different levels inside the plant buildings. Internal hydrants will also be provided for conveyor galleries. Yard hydrants will be provided in the vicinity of each plant unit, normally along the road to meet the additional requirement of water to extinguish fire.

**Portable Fire Extinguishers**

➢ All plant units, office buildings, laboratory, welfare buildings, etc. will be provided with adequate number of portable fire extinguishers to be used as first aid fire appliances. Sufficient quantities of the following extinguishers will be provided at strategic locations in the plant.

**Other Safety Measures**

➢ Safety training to the workers will be given.

➢ PPE will be provided to the workers.

➢ The maintenance and cleaning of bag filters will be carried out regularly.

➢ The dust removal efficiency of bag filters will be check regularly.

➢ Work place environment monitoring will be carried out regularly and records will be

maintained.

- Good housekeeping will be implemented in the plant.
- First aid box will be provided.
- The industry will provide adequate lighting facility inside the plant premises.
- General ventilation will be provided to control dust levels below exposure limits.
- Fire extinguishers will be provided to withstand the fire or explosion condition.
- Pre-employment and periodical medical examination of workers will be done by government approved medical practitioners and the details will be recorded as per the Regulations.
- The industry will prepare on-site emergency plan.
- In case any emergency, arrangement of ambulance van will be done from nearest Hospital.
- Two main gates will be provided for entry and exit of the workers.

**Disaster Management Plan (DMP)**

**Disaster**

Disaster is an unplanned event that can cause death or significant injuries to employees, customers or public. It is a catastrophic situation in which suddenly, people are plunged into helplessness and suffering. As a result, they need protection, clothing, shelter, medical, social care and other necessities of life.

Disasters can be divided into two main groups, namely, natural and manmade. There can be no set criteria for assessing the gravity of a disaster, since this depends to a large extent on the physical, economic and social environment in which it occurs. However, all disasters bring in similar consequences that call for immediate action, whether at the local, national or international level for the rescue and relief of the victims.

**Objectives of Disaster Management Plan**

Disaster Management Plan (DMP) is the process of preparing for mitigating measures, responding to and recovering from an emergency. The DMP is aimed at ensuring safety of life, protection of environment, protection of installation, restoration of production and salvage operations, in this same order of priorities. For effective implementation of the DMP, it should

be widely circulated and personnel training should be provided through rehearsals/ drills.

The DMP should reflect the probable consequences of the undesired event due to deteriorating conditions or through 'Knock on' effects. Further the management should be able to demonstrate that their assessment of the consequences uses good supporting evidence and is based on available and reliable information, incident data from internal and external sources, and, if necessary, the reports of outside agencies.

The objective of the industrial DMP is to make use of the combined resources of the plant and the outside services to achieve the following:

- Effect the rescue and medical treatment of causalities.
- Safeguard other people.
- Minimize damage to property and the environment.
- Initially contain and ultimately bring the incident under control.
- Provide authoritative information to the news media.
- Secure the safe rehabilitation of affected area.
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.
- In effect, it is to optimize that the operational efficiency to rescue, rehabilitate and render medical help and restore normalcy.

**10.0 Emergency Plan**

Emergency planning is primary for the protection of plant personnel and people in nearby areas and the environment that could be affected by unplanned hazardous events. Furnaces are associated with fire and electrical hazard due to sudden generation of pressure or temperature that leads to damage, injury and death. Temperature and pressure are closely related, and when flammable or combustible mixture is present in process equipment that leads to worst consequences. Thus, an engineering evaluation for worst-case scenario has been done under the Factory Act.

**11.0 EMP Budget**

| S. No | Title | Capital Cost Rs. Lakh | Recurring Cost Rs. Lakh/Cost annum |
|---|---|---|---|
| 1. | Pollution Control during construction stage | 0.5 | - |
| 2. | Air Pollution Control (Installation of APCD) | 5.0 | 0.25 |
| 3. | Water pollution Control | 0.5 | 0.25 |
| 4. | Green Belt development | 4.2 | 0.8 |
| 5. | Noise Pollution Control | 0.5 | 0.1 |
| 6. | Solid/ Hazardous Waste Management | 2.5 | 0.5 |
| 7. | Occupational Health, Safety and Risk Management | 1.0 | 0.25 |
| 8. | Energy Conservation | 1.0 | 0.5 |
| 9. | RWH | 15.0 | 0.5 |
| | **TOTAL** | **30.2 Lakh** | **3.15 Lakhs** |

## 12.0 CER Activities (Corporate Environmental Responsibility)

***In lieu of Corporate Environmental Responsibility, the OM dated 30th Sept., 2020 issued by MOEF&CC superseding OM dated 1st May, 2018 shall be followed and commitments made by project proponent to address the concerns raised during public hearing will be part of EMP.***

## 13.0 Environment Monitoring Plan

Regular monitoring of all significant environmental parameters is essential to check the compliance status vis-à-vis the environmental laws and regulation. The frequency of the monitoring will be as follows:

- The ambient Air quality shall be monitored at project site and two upward and downstream locations once every quarter for $PM_{2.5}$, $PM_{10}$, $NO_x$ & $SO_2$, and CO levels during the Construction Phase and Operational Phase.
- The Ambient Noise Levels, Water Quality, Effluent etc. shall also be monitored once every six months or as per EC conditions.